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AUTHOR Montgomery, Joel R.
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ABSTRACT

Today a global shift in education is taking place, moving from a teaching focus to a learning focus. The new vision of education centers on the learner and how teachers can assist the learner in mastering needed competencies and processes required for success in the workplace and in life. This vision looks at the learner as a decision maker, choosing from among available tools and resources to create what is needed for the task at hand. Andersen Consulting Education is focusing on the development of enriched learning environments that support mastery of process as well as technical skills and competencies by groups of learners and that make appropriate use of technology. The consequence of this focus shift at Andersen Consulting Education is an emphasis on the learning needed by the learner and on ways to facilitate learner acquisition and application of that learning in a context identical with or parallel to what they would experience on the job. The learners are exposed to experts in the field and via computer, while the faculty act as coaches or facilitators. The model that can be applied to this type of learning is the M-Model, This model looks at learning as a dynamic process that includes inputs, a transforming process, outputs, and a feedback loop. Six learning approaches are gaining popularity in the business world, each one emphasizing the importance of learning from experience. Andersen Consulting Education has learned 10 specific things from the implementation of the goal-based learning approach for a year. This knowledge can help learners think reflectively on their experiences and become more effective teachers themselves by putting goal-based learning into place. (Contains 12 references.) (KC)

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Global Trend in Education: Shifting from a Teaching-Focus to a Learning-Focus[1]

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by

Joel R. Montgomery[2]

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In the United States of America, beginning near the beginning of the 20th Century, a commitment was made to mass public education. Based on the emergence of the Age of Technology and inspired by the development of the assembly line, it was decided that, by training teachers in instructional skills, they, in turn, could educate the masses. The image of this type of *one-to-many* instruction is the teacher (represented by a fire hose) pouring knowledge (represented by water) into the empty heads of the learners. (See figure 1.)

This approach was implemented successfully and many state colleges and universities had their beginnings in the late 1800's and early 1900's as *normal schools* for teacher preparation. Dewey, among others at the time, pointed to the vital role of learning to learn from experience (1963). Due to the vision of education, the predominant mode of teaching was lecture, followed by reading and other activities. Over time it became clear in our experience of education that the learners' heads were not empty and that much of what the teacher presented never reached the learner or did not find a home there. (See figure 2.)

We relied on our original vision of education and, as technology continued to evolve, we refined our instructional methods and the technology used in the classroom. (This part of the workshop demonstrates some of these refinements which are still effective for information dissemination though not very effective for building practical knowledge or skill.)

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1 The purpose of this workshop is two-fold: First to introduce this global paradigm shift, the M-model for learning from experience, and an example of successful implementation of learning-focused education in a global business setting; second, to provide participants in the workshop an opportunity to apply the M-model personally and professionally in light of this global paradigm shift.

2 Joel R. Montgomery, Ed.D., has been professionally involved in experiential education research, design, and facilitation since 1977, and is currently an education consultant (learning specialist) for Andersen Consulting Education, living in St. Charles, Illinois, USA.

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The global shift in education that is now taking place is from a teaching-focus to a learning-focus (Montgomery, 1992). (See figure 3.) Our new vision of education centers on the learner and how we can assist the learner to master needed competencies and processes required for success in the workplace and in life. (See figure 4.)

This vision looks at the learner as a decision-maker, choosing from among available tools and resources to create what he needs for the task at hand. (See figure 5.) After designing and facilitating education programs following this vision for more than one year, Andersen Consulting Education[3] has discovered by experience that learners, indeed, engage in active decision-making processes in our classrooms, choosing a subset of tools and resources they use to create what they need for success. (See figure 6.) Of course, they may not have attained a high degree of mastery in a two-and-one-half-day school and they are, at least, *on the dart board* (that is, they have mastered the competencies they need to begin to be effective and can now enhance their mastery on the job.

What we are focusing on in Andersen Consulting Education is the development of enriched learning environments that support mastery of process as well as technical skills and competencies by groups of learners, and that make appropriate use of technology (making many experts available to each learner -- *many to one* approach). Our primary facilitators are experienced international consultants brought back to St. Charles to facilitate a learning experience for less experienced consultants. We train the consultants to be effective in their roles as coaching consultants, then provide a professional educator to be the *coaches' coach*, specializing in facilitating and guiding the learning process and on facilitating interpersonal skill development. (See figure 7.)

The consequences of this focus shift at Andersen Consulting Education is an emphasis on the learning needed by the learner and on ways to facilitate learner acquisition and application of that learning in a context identical with or parallel to what they would experience on the job. (See figure 8.) We sometimes do this in a classroom setting in St. Charles and at other times do it via a computer in the consultants' local offices. Learners are mostly active, rather than passive, in this process and understand that they are jointly responsible for their learning. Learners are asked to use what they have learned rather than repeating or identifying what they have been exposed to. The faculty, rather than being experts and lecturers are now coaches and facilitators. We make the experts available in the computers.

The way we design our programs is to stimulate the learners to engage in activities that allow them to focus their learning on what we know they need. In the process we give them tools to reflect on what they are doing, to evaluate it according to some standard, and to give and receive feedback about what they are doing and learning. (See figure 9.) Once they have gone through that process once, we again stimulate them to re-engage in learning, bringing with them what they learned the first time, again reflecting on, evaluating, and giving and receiving feedback on what they are doing and learning. These activities ensure a greater depth of learning.

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[3] Andersen Consulting Education is a part of the Professional Education Division of Arthur Andersen & Co., S.C. and is based in St. Charles, Illinois, USA. Andersen Consulting Education builds learning products for the Andersen Consulting, LLP, business unit.

The model for learning that can be applied to this type of design is the M-Model, developed from several models of learning to learn from experience (Montgomery, 1992). (See figure 10.) This model looks at learning as a dynamic process that includes inputs, a transforming process, outputs, and a feedback loop. We will look at some of the sub-components in more detail in a few moments. For now, let's look at the entire process of learning. Life experience is a major component that we use as a background against which to work with new material presented to us in any form. We attempt to integrate the new material with our life experience during the reflective learning process in which the new material is incorporated into our transformed life experience. We constantly evaluate the relevance to our life experience of the new knowledge during the reflective learning process and as a part of the evaluation feedback loop. It is critically important to attempt to put the new knowledge into practice as soon as possible to test its relevance consciously before relegating the information to the background of our awareness where we may or may not be able to access it upon demand.

Let me illustrate how this model works in practice with a personal experience.

> The morning before my first parachute jump in the Army I was listening to a lecture from a colonel who had made hundreds of jumps. As a part of his remarks, the colonel said, "After you jump, look above you. If you see anything above your head other than a circle of white, use your reserve 'chute." He went on to tell us that, if our main 'chute was partially open, the reserve would come up in our faces like a sheet and that we would have to get air under it by *popping* it (much like *popping* a sheet to make a bed). (*New Information*)
>
> A few hours later I was the first from my training group to jump from the plane. After the shock I felt when my main parachute opened, I relaxed and looked up at the circle of white above my head. I was overjoyed to see that my 'chute had opened when I noticed that the circle of white was not complete. There was a big patch of blue where part of my parachute had disappeared.
>
> The colonel's words flashed into my awareness (*reflective learning process*) and I activated my reserve parachute. Because my main 'chute was partially open, the reserve did fly up into my face like a sheet *(more reflective learning process)* and I spent several anxious moments *popping* my reserve 'chute. About 100 feet above the ground my efforts allowed the reserve 'chute to open fully and I landed safely with my fall softened by the effort of two parachutes. (*transformed life experience, practical application, success recorded in the evaluation feedback loop)*
>
> Everything I had remembered from the colonel's lecture had had intense personal relevance for me. By remembering and implementing his suggestions I completed my first parachute jump successfully. From then on those remarks remained part of the integrated life experience I brought with me to all subsequent parachute jumps.

The reflective learning process is a core element of the M-Model (Montgomery, 1992, 1993). (See figure 11.) As we approach our experience we involve ourselves in this five-step process taking place at two different levels over time. At the first level we are looking for ways to make new choices. At the second level we are looking for new

perspectives. We will be working with this M-Model and the reflective learning process in the experiential portion of this workshop.

Six learning approaches are gaining popularity in the business world. Each one emphasizes the importance of learning from experience. (See figure 12.) The Andersen World Wide organization[4] is currently exploring most of these for internal professional development of its consultants. Structured on-the-job training refers to merging such training with a career development plan based on the identified competency needs of the organization and the current degree of competency mastery by the employees (consultants). Apprenticeship, Coaching, and Modeling refers to another career development approach that uses career enhancing assignments with designated mentors to develop practical competence. Goal-based scenarios offer learners an opportunity to go through a time-compressed process that allows them to see the results of their efforts (Collins, 1994; Schank, 1994). (This type of learning will be discussed more fully later in this presentation.) Action Learning (and Action-Reflection Learning) are organizational change strategies that allow identified teams (usually executives) to tackle a real organizational challenge or problem in real time (six months or so), taking the time to learn whatever they need to learn along the way to resolving the challenge. Problem based and project based approaches use problem solving and project completion as the primary focus for learning. At Andersen Consulting Education we are committed to learning-focused education and, while much of our work is in goal-based scenarios, we are exploring variations of these approaches that will provide a life-like context where our consultants can build mastery of competencies essential to their success on the job.

We are *reengineering* the process we use to design and facilitate learning environments (Nowakowski, 1994). For the goal-based scenario, this context for reengineering includes presenting the learners with a goal that is, in itself, challenging and stimulating, providing them an enriched environment that allows them to seek the specific resources, tools, and information each learner needs on a *just-in-time* basis, and allowing learner teams to choose the strategy they feel will allow them to reach their goal (Campbell & Monson, 1994). (See figure 13.) The goal-based scenario will often contain real-world tasks, authentic environments, and enriched support systems that include people, technology, and processes (presented in printed material and other resources). (This provides a context that relates to Andersen Consulting's *Business Integration* strategy.) (See figure 14.) This learning approach has been found effective both for self-study learning (Acovelli & Nowakowski, 1994) and for group learning in a classroom (Montgomery, Campbell, & Moffett, 1994).

Let's look at an example of a classroom-based, goal-based scenario in action. The context is a school required for Senior consultants (with two-and-one-half to four years of experience with the firm) in the Information Technology (Systems Integration) specialty of Andersen Consulting. The name of the school is the Systems Analysis and Design School (SAnDS). One half of the five day school is devoted to a goal-based

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[4] Arthur Andersen & Co., S.C., registered in Geneva, Switzerland with World Headquarters in Chicago, Illinois, USA, is also referred to as the Andersen World Wide organization. It supports two global business units: Andersen Consulting, LLP, and Arthur Andersen, LLP.

scenario module where the consultants are asked to develop a design and a *look and feel prototype* of the graphical user interface for a hotel reservation system. The fictitious client is the Innmasters Hotel Chain. 3,000 consultants go through this school each year, in groups of 144 every other week. They are divided into four sections with 36 learners in each section. The faculty for the school are consulting managers brought in the week-end before the school begins on Monday morning. Three managers work with each section. Two of the managers are project coaches and one role-plays a client executive. One learning coach supports the whole four-section school. The general process they go through is to organize themselves, exploring their environment and resources; then analyze the requirements, develop the design and prototype, and, finally, review their work and what they have learned. (See figure 15.)

Let us take a few minutes (eight and one-half) to see what developers, faculty, and learners have to say about this Innmasters goal-based scenario (Andersen Telemedia, 1993). Note their enthusiasm and the tips for success they pass down to future faculty and learners. (See figure 16.) .... As you saw, everyone involved in the goal-based scenario is enthusiastic about the experience and about what this type of learning means with regard to developing practical consulting skill. The learning approach can be adapted for other integrated skills (for example, decision-making, teaching/facilitating learning, patient care, customer service).

We have learned much from more than one year of developing and facilitating goal-based scenarios (Montgomery, Campbell, & Moffett, 1994). Ten specific learnings (see figures 17 and 18) are:

1. The goal-based learning-focused environments represent a significant challenge for learners and faculty. The *learning coach* role is very important for the success of the learning experience. The learning coach functions as both a learning specialist and a change agent.

2. The learning coach works with the faculty over the weekend before the school begins. The tone and pace set (and demonstrated) by the learning coach has significant influence on the tone and pace the faculty set for the school.

3. We now have courses that have two goal-based scenarios running back-to-back--the Implementing Business Solutions School (IBSS). We have seen that learners and faculty become more sophisticated on their second experience of a goal-based scenario. Their expectations for the content and support of the learning experience is significantly increased.

4. As a global firm, we have consultants coming to St. Charles for training from all over the world. It is common for learners and faculty to come from as many as 62 Andersen offices and 12 different countries, with multiple languages represented by one or more learners or faculty. Since each team collaborates in the sharing of ideas and the decision-making process of accomplishing their goal, it is important for the teams to communicate well. While English is the common language of the firm, not everyone is fluent in spoken English. Therefore we compose teams (and pairs) who share a common language. It is normal to walk through a classroom to hear teams working together in Italian, Japanese, Spanish, along with English. The client meetings and meetings with project coaches are normally conducted in English, though team processing of

what was learned in these meetings will be in the language the team finds it most effective to use.

5. Formerly, when faculty came to St. Charles they concentrated on enhancing their presentation skills. Now the faculty report that they are building their coaching and facilitating skills as well as updating their technological base by working with the support systems.

6. Our Andersen culture emphasizes the production of quality deliverables for our clients. Consultants coming to these courses can develop *tunnel vision* about these deliverables and, in our early efforts in goal-based scenario, we actually take time out of their work to focus on what they are learning and on the skills they are building. (See figure 19.) As we mature in our development of training using this learning approach, we find ways to integrate this learning more fully in the process toward the deliverables so that the learner, in order to produce a quality deliverable, will automatically demonstrate appropriate mastery of the focus competencies and knowledge.

7. Time is compressed in a goal-based scenario. If we try to put too much into our design (always a great temptation), learners will, of necessity, skim the surface of the learning opportunity and fail to develop the deeper levels of skill we want them to have. We need to remember to allow appropriate time and to manage the number of competencies we want the learners to develop.

8. Reflection is a key component in learning (Montgomery, 1992, 1993). Reflection does not always take place as a conscious practice. In our emerging designs we are providing increased opportunities for structured reflection as an integral part of the process. Learners and faculty engage together in reflection at different times in the learning experience. (We are also considering using other words--*thinking*, for example--so that learners and faculty do not feel that we are introducing an academic or artificial process in their work environment.)

9. Learners are reporting advances in both consulting and technical skills (see figure 19) that they can immediately apply on their jobs (Andersen Telemedia, 1993).

10. In developing support systems, it is important to take into account the way learners naturally learn (multiple learning styles; multiple orientations such as visual, aural, kinesthetic; multiple preferences for problem solving, etc.). The key in designing the support systems is to allow intuitive entry into the support systems from multiple perspectives. It is also important to use technology to facilitate learning rather than merely automating a reference system.
[Note: During the Experiential Learning Bazaar segment of this conference, we will be playing video-tapes providing more detail on the technology supporting both the group learning, classroom-based goal-based scenario (Andersen Telemedia, 1994b) and the self-study goal-based scenario (Andersen Telemedia, 1994a).] (See figure 20.)

Moving now to the experiential portion of the workshop, let us look again at the M-Model for learning and the reflective learning process. (See figures 21 and 22.)[5]

First reflecting individually, then sharing in table groups, use the model (figure 21) to capture a significant learning experience in your life--one with intense personal impact. (The experience I related of learning during my first parachute jump may give you an idea of a place to start.) Take a few moments to reflect individually, then, as your table is ready, begin sharing your experiences. Take up to fifteen minutes for this process.

Next, based on your experience so far in this workshop, think about the organizations you are affiliated with. Where are they in this transition from teaching-focused to learning-focused education? What could be moved from teaching-focused, passive learning to learning-focused, active learning? How would you set priorities for change? What support would you need for change? How could you go about securing that support? What learning approach would work well initially in your organization's culture? Share your thoughts with your table group. (You may want to refer to the reflective learning process [figure 22] as you are thinking and discussing these ideas.) Take up to fifteen minutes for this process.

Looking at what you have thought about in the first two activities, how could you move your learning (either your personal learning or your thoughts on the education focus of your organization) to a new (higher) perspective? Many writers in the field of learning to learn from experience emphasize the importance of continuing to evolve to increasingly higher levels of perspective (Montgomery, 1992, 1993). (See figure 23.) Using the reflective learning process a second time, take your learning to a second (higher) level of reflection and perspective. You have fifteen minutes for this activity. You may want to work individually, in pairs, or in table groups. Communicate to your table groups what you are learning.

Final activity (optional) write down what you have learned or what you want to do next as a result of your experience in this workshop.

References

Acovelli, M. and Nowakowski, A. (1994, Oct-Nov). The Business Practices Course: Self-Study Learning Reengineered. *Educational Technology (34)* (9). pp. 21-27). (In the Special Section, *Goal-Based Scenarios: A New Approach to Professional Education*, pp. 2-32.)

Andersen Telemedia. (1994a). *BPC: Reengineering Self Study Training* (Video-tape number 2388). St. Charles, IL: Arthur Andersen & Co., S.C., Professional Education Division, 1405 N. Fifth Ave, St. Charles, IL 60174. (Telephone 708-444-4296.)

Andersen Telemedia. (1993). *Building Skills Using Goal-Based Scenarios (Participant Version).* (Video-tape number 2157). St. Charles, IL: Arthur Andersen & Co., S.C., Professional Education Division, 1405 N. Fifth Ave, St. Charles, IL 60174. (Telephone 708-444-4296.)

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[5] The experiential activity instructions are presented here so that readers not in attendance at the workshop can participate in the activities on their own.

Andersen Telemedia. (1994b). *On-Line Support Systems : Enhancing the Learning in a Goal-Based Scenario.* (Video-tape number 2351). St. Charles, IL: Arthur Andersen & Co., S.C., Professional Education Division, 1405 N. Fifth Ave, St. Charles, IL 60174. (Telephone 708-444-4296.)

Collins, A. (1994, Oct-Nov). Goal-Based Scenarios and the Problem of Situated Learning: A Commentary on Andersen Consulting's Design of Goal-Based Scenarios. *Educational Technology (34)* (9). pp. 30-32). (In the Special Section, *Goal-Based Scenarios: A New Approach to Professional Education*, pp. 2-32.)

Dewey, J. (1963). *Experience and education.* (Originally published in 1938.) New York, NY: The Free Press.

Campbell, R. and Monson, D. (1994, Oct-Nov). Building a Goal-Based Scenario Learning Environment. *Educational Technology (34)* (9). pp. 9-14. (In the Special Section, *Goal-Based Scenarios: A New Approach to Professional Education*, pp. 2-32.)

Montgomery, J.R. (1992). *The development, application, and implications of a strategy for reflective learning from experience.* Ann Arbor, MI: University Microfilms International. (Dissertation Order Number 9229831.)

Montgomery, J.R. (1993). *Reflection: A meta-model for learning and a proposal to improve the quality of university teaching.* Paper presented at the University of Monterrey, Nueva Leon, Mexico, August 25, 1993. (ERIC Document Reproduction Service No. ED 362 109.)

Montgomery, J.; Campbell, R; Moffett, C. (1994, Oct-Nov). Conducting and Supporting a Goal-Based Scenario Learning Environment. *Educational Technology (34)* (9). pp. 15-20. (In the Special Section, *Goal-Based Scenarios: A New Approach to Professional Education*, pp. 2-32.)

Nowakowski, A. (1994, Oct-Nov). Reengineering Education at Andersen Consulting. *Educational Technology (34)* (9). pp. 3-8). (In the Special Section, *Goal-Based Scenarios: A New Approach to Professional Education*, pp. 2-32.)

Schank, R. (Graham, W.) (1994, Oct-Nov). Goal-Based Scenarios and Business Training: A Conversation with Roger C. Schank. *Educational Technology (34)* (9). pp. 27-29). (In the Special Section, *Goal-Based Scenarios: A New Approach to Professional Education*, pp. 2-32.)

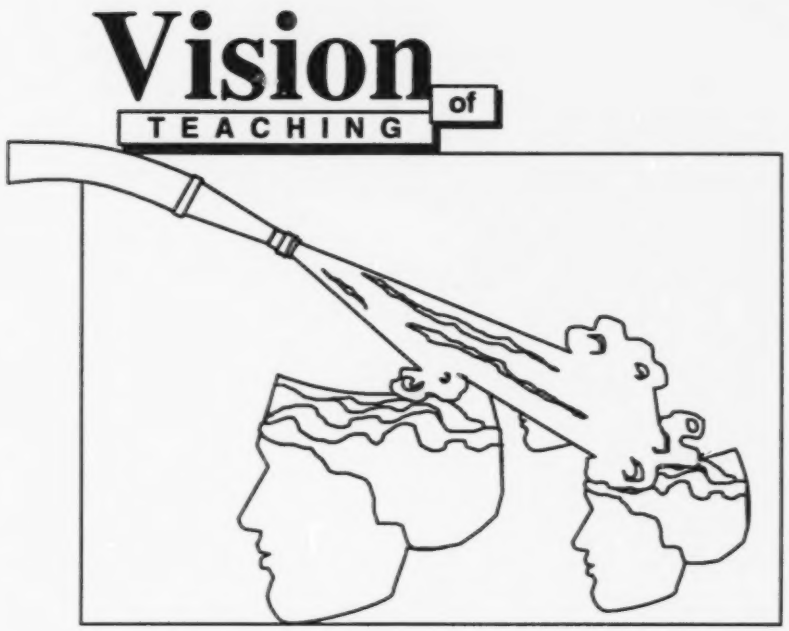

Figure 1

Figure 2

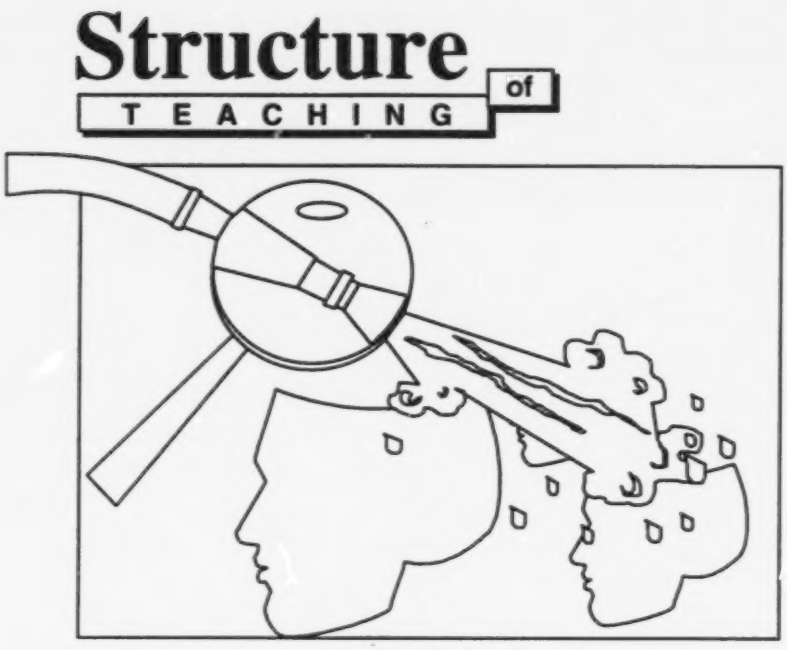

Figure 3

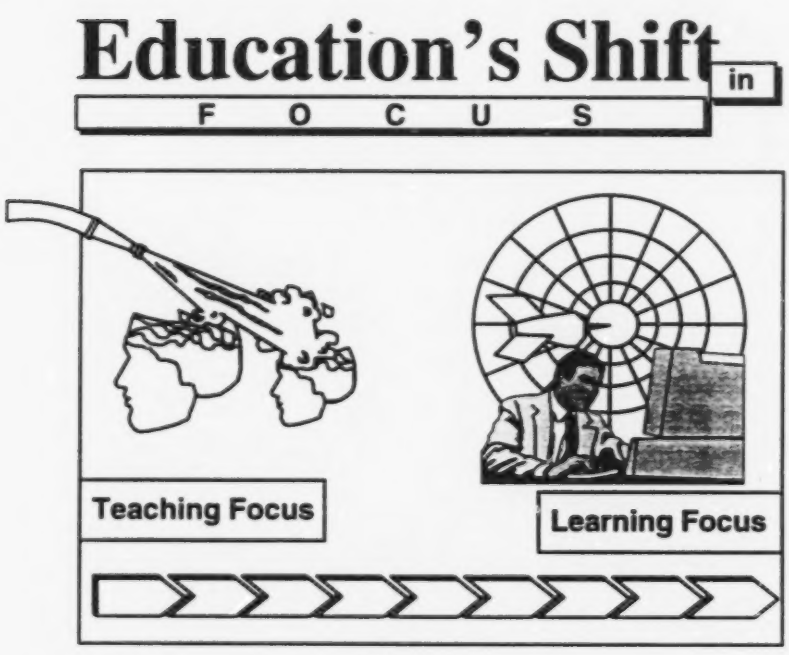

Figure 4

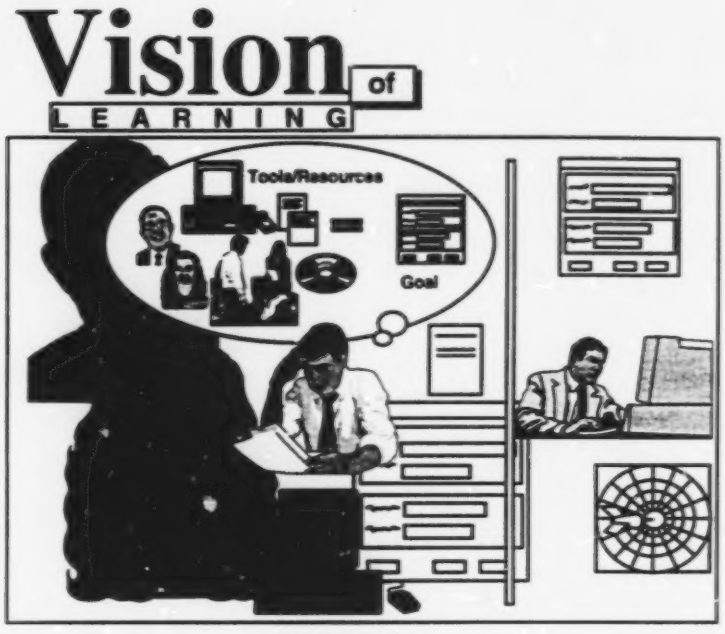

Figure 5

Figure 6

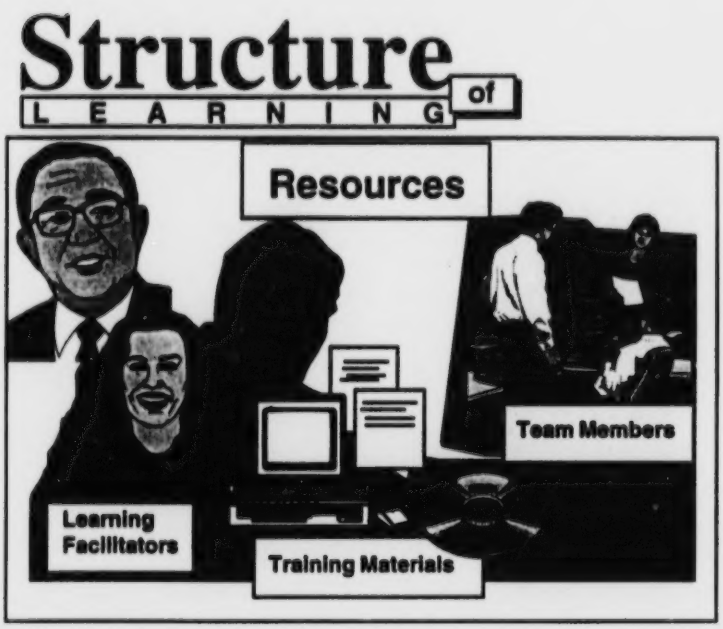

Figure 7

Consequences of Focus Shift

Andersen Consulting Education

	Teaching-Focus	Learning-Focus
Focus	Faculty	**Learners**
Learners	Mostly Passive	**Mostly Active**
Learning	Faculty Responsible Context-Independent Retention	**Jointly Responsible** **Context-Related** **Reflection/Application**
Faculty Roles	Experts Good Presenters	**Coaches/Facilitators**
Outcomes	Product/Solution "Tool kit"	**Process/Learning** **Increased Skill in Applying Tools**

Figure 8

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Relationship between Stimulation & Engagement in the Learning Process

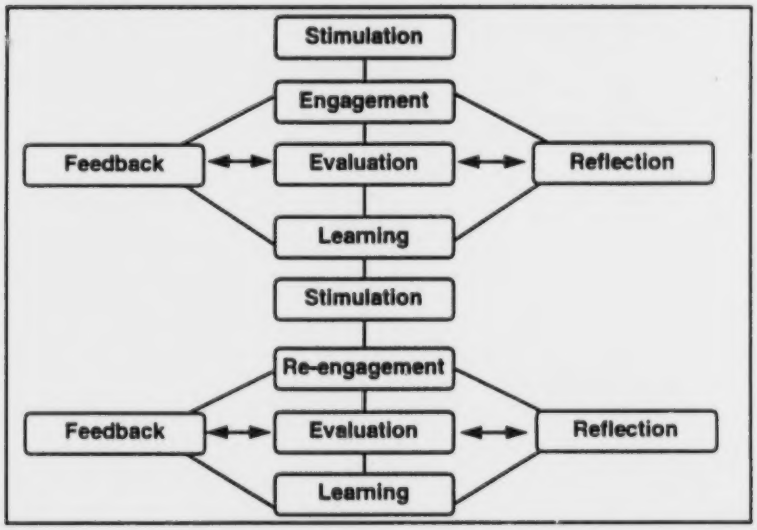

Figure 9

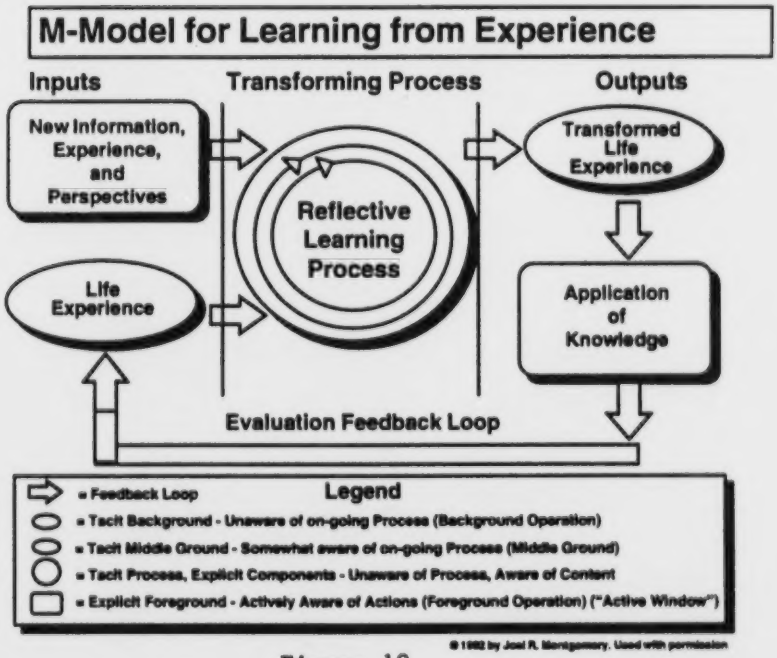
M-Model for Learning from Experience
Inputs
Transforming Process
Outputs
New Information, Experience, and Perspectives
Life Experience
Reflective Learning Process
Transformed Life Experience
Application of Knowledge
Evaluation Feedback Loop
Legend
= Feedback Loop
= Tacit Background - Unaware of on-going Process (Background Operation)
= Tacit Middle Ground - Somewhat aware of on-going Process (Middle Ground)
= Tacit Process, Explicit Components - Unaware of Process, Aware of Content
= Explicit Foreground - Actively Aware of Actions (Foreground Operation) ("Active Window")

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Figure 10

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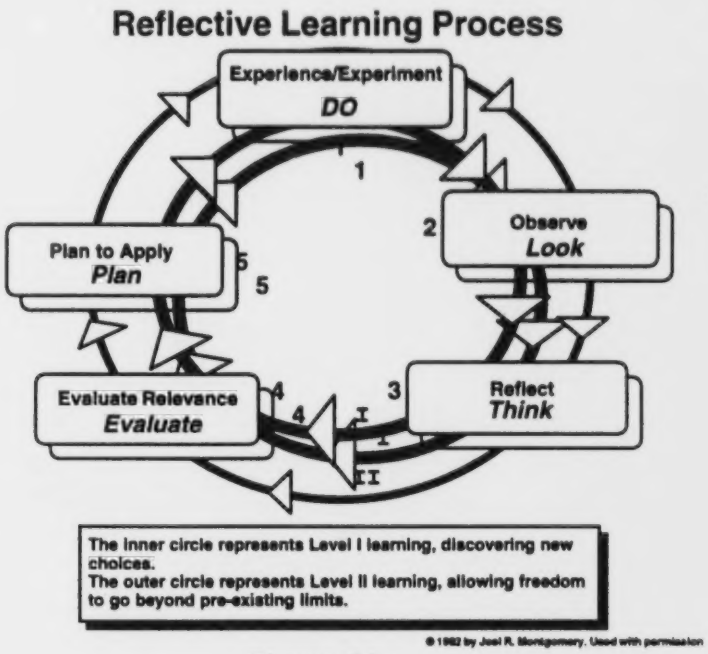

Figure 11

Approaches gaining support in the business world

- ☐ Structured-on-the-job
- ☐ Apprenticeships, coaching, modeling
- ☐ Goal-based scenario
- ☐ Action (-reflection) Learning
- ☐ Problem based
- ☐ Project based

Figure 12

Context for Reengineering

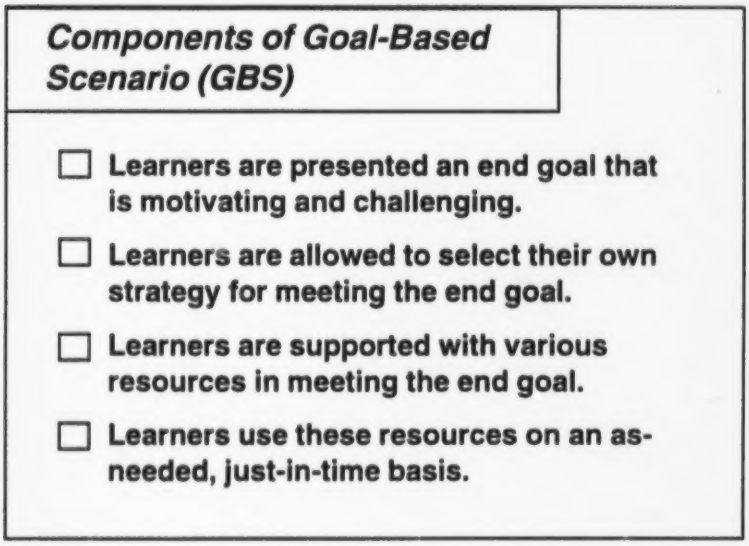
Components of Goal-Based Scenario (GBS)
Learners are presented an end goal that is motivating and challenging.
Learners are allowed to select their own strategy for meeting the end goal.
Learners are supported with various resources in meeting the end goal.
Learners use these resources on an as-needed, just-in-time basis.

Figure 13

Context for Reengineering

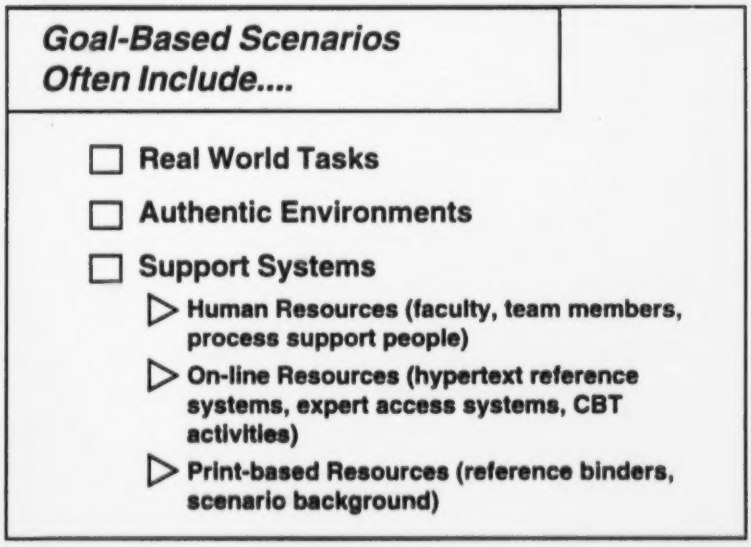
Goal-Based Scenarios Often Include....
Real World Tasks
Authentic Environments
Support Systems
Human Resources (faculty, team members, process support people)
On-line Resources (hypertext reference systems, expert access systems, CBT activities)
Print-based Resources (reference binders, scenario background)

Figure 14

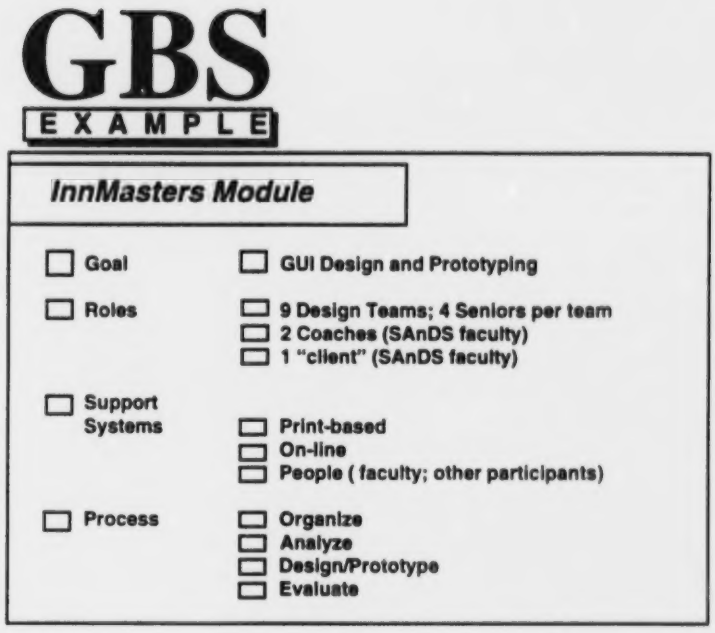

Figure 15

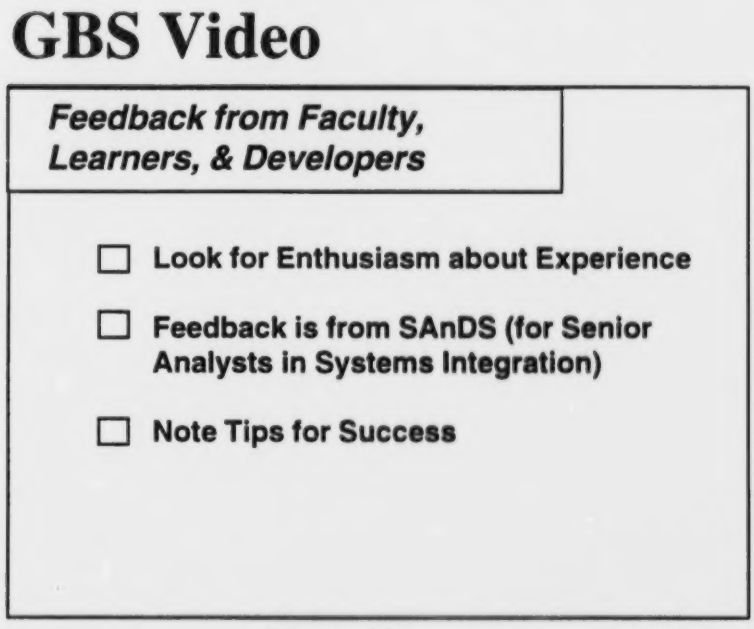
GBS Video
Feedback from Faculty, Learners, & Developers
Look for Enthusiasm about Experience
Feedback is from SAnDS (for Senior Analysts in Systems Integration)
Note Tips for Success

Figure 16

10 Lessons Learned

From More than One Year's Experience with GBS

1. **Learning-focused environment is a new challenge for learners and faculty. "Learning Coach" as change agent.**
2. **Learning Coach sets tone and pace for faculty in faculty prep. This builds trust, confidence, and success.**
3. **Learners and faculty become more sophisticated the second time through a learning-focused experience.**
4. **Learner teams need to be able to communicate and to collaborate together. Mix sharing common languages.**
5. **Faculty report change and growth in professional skills as they practice effective coaching and mentoring.**

Figure 17

10 Lessons Learned

From More than One Year's Experience with GBS

6. **Lessons learned and target skills gained by the learners are what they take with them to clients. Bring these into focus from time to time during the week.**
7. **Timing is critical in allowing awareness of learning to take place. Too much time compression results in "skimming the surface" rather than deeper skill-building.**
8. **Reflection is key to adding meaning to experience. Structured reflection brings out learning and skill.**
9. **Learners report building both technical and consulting skills, some of which they can apply immediately.**
10. **In preparing resource materials, take advantage of the way people learn naturally. Ensure support systems go beyond being automated references to actively facilitating learning.**

Figure 18

Skills Wheel

☐ **Design Skills**

1. Interpret User Requirements Analysis Documentation
2. Use Client/Server and GUI Terminology Appropriately
3. Identify and Analyze various Client/Server Strategies
4. Applying Systems Design Process
5. Identify and Analyze Data Distribution Issues
6. Plan a GUI Design and Prototyping Effort for a Client/Server Environment
7. Design Effective GUI's
8. Document Client/Server Application Designs
9. Develop Effective Prototypes

☐ **Consulting Skills**

10. Teamwork
11. Effective Time Management
12. Effective Problem Solving
13. Prioritization of Resources
14. Managing Client Relationship

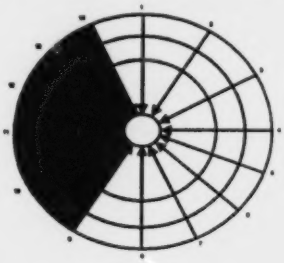

Figure 19

On-Line Systems Video

Feedback from Faculty, Learners, & Developers

- ☐ Look for Enthusiasm about Experience
- ☐ Feedback is from SAnDS (for Senior Analysts in Systems Integration)
- ☐ Note Tips for Success
- ☐ Note Integration of On-Line Systems in task completion (IPSS)

Figure 20

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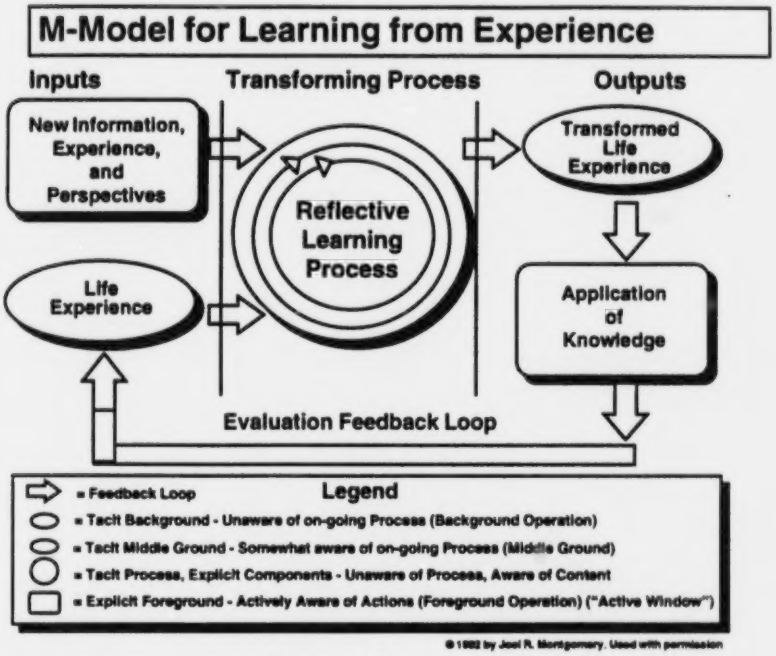
M-Model for Learning from Experience
Inputs
Transforming Process
Outputs
New Information, Experience, and Perspectives
Life Experience
Reflective Learning Process
Transformed Life Experience
Application of Knowledge
Evaluation Feedback Loop
Legend
= Feedback Loop
= Tacit Background - Unaware of on-going Process (Background Operation)
= Tacit Middle Ground - Somewhat aware of on-going Process (Middle Ground)
= Tacit Process, Explicit Components - Unaware of Process, Aware of Content
= Explicit Foreground - Actively Aware of Actions (Foreground Operation) ("Active Window")
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Figure 21

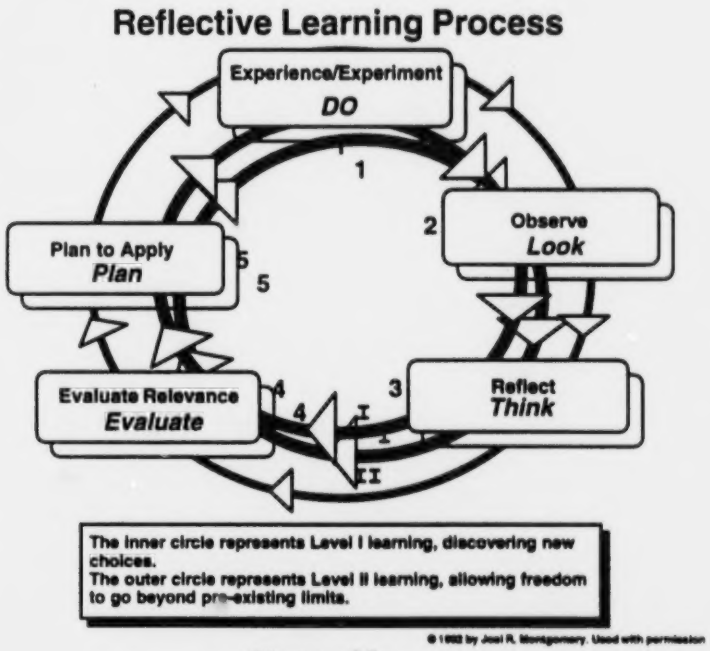

Figure 22

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Comparison of Reflective Perspectives

Author(s)	Level 0	Level I	Level II	Level III	Level IV
Argyris and Schon (1982)		Single-Loop	Double-Loop		
Bateson (1978)	Learning 0	Learning I	Learning II	Learning III	Learning IV
Cell (1984)	Response	Situation	Trans-Situational	Transcendent	
Freire (1970)	Banking	Praxis	Problem-Solving Dialogue		
Jarvis (1987a)	Presumption Non-Consideration Rejection Pre-Conscious Practice Memorization Contemplation	Reflective Practice	Experimental Learning		
Kolb (1984)	Undifferentiated Self	Self as Content *–Interactions*	Self as Process *–Transformations*		
Mezirow (1981)		Consciousness	Critical Consciousness		
Suarez, Mills, & Stewart (1987)	Unaware of Process of Thought	Aware of Process of Thought	Wisdom: Can Change Process of Thought		

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Figure 23

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